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**ACHIM STEINER**

United Nations Under-Secretary-General and Executive Director, UNEP

Children on one of southern Africa's mightiest rivers are playing the Limpopo board game, literally for their lives. Piloted in places like Zimbabwe's Matabeleland and Mozambique's Gaza Province, it uses the power of play to teach ways of reducing vulnerability to flooding.

If a counter lands on a space showing a well designed flood-proof village – or one advising children to move themselves and livestock to higher ground – it moves forward several spaces. But if it alights on one depicting a decimated forest, land degradation, or other factors increasing vulnerability, it must go back six.

The game – part of a larger project, funded by the Global Environment Facility (GEF), launched after the devastating Limpopo floods six years ago – underlines in a simple but poignant way the challenges developing countries face as they try to adapt to the extreme weather events linked to climate change.

Clean development

In industrialized countries, progress is starting to be made in reducing emissions of greenhouse gases as a result of the Kyoto Protocol and through its flexible mechanisms. The Protocol links to the developing world; for example through the Clean Development Mechanism (CDM) which allows developed countries to offset

**YVO DE BOER**

Executive Secretary, United Nations Framework Convention on Climate Change

emissions (for example through forestry and renewable energy projects in developing countries) and has burst into life.

By 2012, certified emission reductions achieved through the CDM are expected to reach at least 1.2 billion tonnes, more than the combined emissions of Spain and the United Kingdom.

The industrialized countries as a group are still on track to meet their Kyoto commitments, provided they make a more extensive effort domestically, and make active use of the market mechanisms of the Kyoto Protocol. It is clear, however, that in the long run deeper emission cuts will be required.

But past pollution from industrialised countries has already guaranteed us some climate change: carbon dioxide, after all, can persist in the atmosphere for up to 200 years. So the global community must help developing countries adapt.

Climate proofing

Least Developed Countries have – or are preparing – National Adaptation Programmes of Action (NAPAs) under the United Nations Framework Convention on Climate Change. Take Malawi, where almost every facet of life will need some measure of 'climate proofing'. Droughts and floods have increased in intensity, frequency and magnitude over the past few decades.

Floods destroyed fish ponds

six years ago, while a drought in the mid 1990s triggered a total loss of fish stocks in Lake Chilwa. Malawi's NAPA calls for restocking, assistance in fish breeding, and better understanding of how temperatures disrupt the reproduction of key species.

It also calls for reforestation of the catchment of the Shire River which produces most of the country's electricity. Deforestation and unsustainable agricultural practices has led to the siltation of dams.

Samoa's NAPA calls for assistance to move infrastructure and communities to higher ground, for measures to strengthen buildings against increased cyclones, and for restoring community springs. It says that boosting the health of habitats and ecosystems will provide vital buffers against climate change.

Funding for adaptation is starting to accumulate as a result of investments in the CDM and voluntary pledges to a special fund established to finance the implementation of NAPA activities. However, these resources must be augmented if they are to have measurable results in the poorest countries of the world.

Emission reductions

It is becoming clear that all investments in developing countries, both public and private, must factor in climate change if they are to be viable. But this cannot be an alibi for inaction on emission reductions.

Scientists estimate that a 60 to 80 per cent cut in greenhouse gases will be needed to stabilize the atmosphere. We must keep our sights set firmly on this target. Otherwise everyone, rich and poor alike, will have more and more pressure to adapt and fewer places to adapt to and from. They will end up playing their own versions of the Limpopo River game – and, like the children on its banks, playing for their very lives ■

Facing the Challenge

MWAI KIBAKI addresses climate change and the African development dilemma



G. Griffiths/Christian Aid/Still Pictures

The climate change Convention and its Kyoto Protocol provide a good basis for multilateral action. Although some progress has been made in the implementation of these instruments, the actions are far from adequate. This is primarily because of the limited scope of the commitments of developed country parties and inadequate implementation of these commitments. The extent to which developing countries can comply with their commitments and therefore contribute towards the ultimate objectives of the Convention, is dependent on their being facilitated by developed Country Parties. The climate change negotiation process and the outcome of these negotiations need to be fair to all countries.

Africa is the region most vulnerable to the impact of climate change despite the fact that it is the least responsible for contributing to greenhouse gas emissions. The implementation of practical adaptation activities with predictable and secure funding therefore is a top priority for Africa in this Conference. In terms of mitigation, equity is needed in the implementation of the Clean Development Mechanism (CDM).

While this is a largely private sector venture, there are certain actions governments can take to even out the ground. Specific targets need to be set to redress the imbalances in the geographical distribution of CDM projects. Africa supports the exploitation of other options for mitigation, including those which may not be covered by CDM, and particularly those that promote local sustainable development objectives.

Working within the principles of equity and common, but differentiated, principles, it is important that we view climate change as an opportunity to address the challenges of achieving sustainable development, rather than framing it as an environmental problem. There is need for countries to have a flexible global regime to cater for the changing circumstances. At the core of this regime must be elements relating to adaptation, technology development and transfer.

I wish to state that in the interest of sustainable development of our region, we are keen to be associated with global efforts to foster long-term cooperative action to address climate change by enhancing the implementation of the climate change Convention and its Kyoto Protocol.

We realize that for all these efforts to succeed, action must start at the national level. Kenya is prepared to face this challenge together with other nations of the World ■

Mwai Kibaki is President of the Republic of Kenya.

On behalf of the Government and the people of Kenya, I wish to extend a warm welcome to all the delegates and other visitors who have come to Nairobi to attend the twelfth Conference of the Parties. Kenya is honoured to host the twelfth Conference of the Parties which is also the second meeting of the Parties to the Kyoto Protocol (COP/MOP2) in November this year at the United Nations Offices in Nairobi.

It is appropriate that the Conference be held at the premises of the only United Nations headquarters in the developing world and we look forward to a successful and memorable conference. climate change is a reality which affects all countries but its impact is and will be most acutely felt in the developing world, particularly in African countries. climate change is threatening to frustrate poverty eradication efforts and make the prospect of meeting the Millennium Development Goals far less certain.



Window of Opportunity

MARK MALLOCH BROWN reports a growing momentum in governments and business to tackle climate change, and describes how the issue is being mainstreamed through the UN system

The carbon-based economy is in many respects an uncontrolled experiment on the global climate, with serious, but hard to measure risks for the economy, the environment and human health. For several decades now, the world's leading scientists have been warning that without major policy changes in the next few years, we face a future filled with danger.

While projections still combine uncertain effects with certain facts, even the minimum predicted shifts in climate for the 21st century are likely to be significant and disruptive. To take just one of many very worrying examples, sea levels have already risen by 10 to 20 cm over pre-industrial averages.

Without urgent and concerted action, five broad trends appear inescapable:

1. The world's coasts will face increasingly severe storms and floods, with the inundation of coastal areas displacing millions of people.
2. Salt-water intrusion from rising sea levels will impact the quality and availability of freshwater, worsening the world's growing water crisis.
3. As warmer conditions alter forests, wetlands and rangelands, the damage to the Earth's ecosystem will be far reaching and irreversible: some 25 per cent of mammals and 12 per cent of birds could become extinct over the next few decades.
4. Shifting agricultural lands and creeping desertification will leave

many areas unfit for crops or grazing.

5. Warmer and wetter conditions may accelerate the spread of new varieties of infectious diseases such as malaria and yellow fever.

Dire consequences

Each of these scenarios has dire consequences for our world. Yet, while consensus on the science is gradually moving towards the more alarmed end of the scale, determined resistance by a powerful minority of doubters has made effective strategies difficult to agree and implement. Such delay should concern all countries, but is especially troubling for developing ones that remain particularly vulnerable to the effects of climate change.

Poor people already live on the front lines of poverty, pollution, disaster, and degradation. Their livelihoods and food security depend directly on agriculture, forestry and fisheries. Their economies will suffer most from the heightened frequency of drought, floods and storms associated with climate change. Indeed, there is a real risk that climate change could erect new obstacles in the way of achieving the Millennium Development Goals.

Climate change policies require strong economic resolve, ►

particularly in light of two closely linked global concerns: energy security and worldwide economic stability in an era of rising oil prices. Creative responses driven by solid research, shared knowledge and the participation of governments and people at all levels are needed to meet this critical challenge.

At a very minimum, the world must pursue a double strategy: We need to reduce emissions of greenhouse gases, which means altering how we live and do business – including through more efficient use of energy and other resources,

taking place. They also understand the need for market and non-market approaches, and for striking a balance between public policy prescriptions and technology-based solutions. Of course, not all States share the same commitment to addressing the challenge, and they also differ on what actions to take. But the broad, common acceptance of the problem presents a new window of opportunity to tackle the challenge collectively.

Even before this political momentum was generated, real gains were being made. The

by developing countries, has yet to realize its potential to help developed countries meet their targets, or to prompt meaningful changes in production and consumption patterns in developing ones. Nevertheless, the global carbon market, including CDM and emissions trading, stands at \$11 billion, and is expected to grow significantly.

This market reflects a remarkable feature of the climate process: the growing involvement of the private sector and the interest of new business sectors. While some of the responses are due to mandatory



Mark Edwards/Still Pictures

We need to reduce emissions of greenhouse gases, which means altering how we live and do business — including through more efficient use of energy and other resources

technological development, and greater public awareness. And we need to adapt to the climate change that is already inevitable because of the massive accumulation of past emissions.

Despite the minority of sceptics, momentum to address the climate crisis is growing. The communiqué issued by G-8 Members last year at Gleneagles – and their actions and pronouncements since – underscore the fact that major players no longer question whether climate change is

UN Framework Convention on Climate Change, the centrepiece of global efforts to limit and stabilize atmospheric greenhouse gas concentrations, has come to enjoy nearly universal membership. And with the entry into force of the Convention's Kyoto Protocol, a new era of fighting climate change has begun. The 155 parties to this Protocol have agreed to reduce developed countries' greenhouse gas emissions to levels 5.2 per cent below their 1990 amounts. The Protocol created three innovative and cost-effective market-based mechanisms to assist developed countries to comply with its commitments: the Clean Development Mechanism (CDM), Joint Implementation, and International Emissions Trading.

CDM, the only market instrument currently available to facilitate greenhouse gas reductions

regulations, companies – both from Kyoto parties and from non-parties – are increasingly realizing that carbon trade can be potentially quite lucrative. This trend received a further boost with the start of the European Union's Emissions Trading Scheme in 2005: its empirical data on actual prices of carbon emission reductions significantly improves upon prior academic or government estimations.

Renewable energy

The development of such trading schemes underpins the reality that private investment and corporate behavioural change will prove at least as significant in winning the climate fight as direct government action. The magnitude of the task before us means that neither governments nor businesses can hope to address ►

it alone. That is why strong political will has to be matched with sustained private effort to arrive at solutions to changing climate.

Already, the private sector is engaged as never before, and not just through Kyoto's market mechanisms. More and more, corporate leaders are grasping the potential of renewable energy, hybrid vehicles, breakthrough techniques and green technologies. The financial and insurance sectors have become increasingly concerned about climate change as a business risk, and have been pressing Governments to act with greater determination.

Economic growth

Particularly promising are recent moves to introduce environmental criteria into key measures of corporate performance. Earlier this year, institutional investors from around the world, representing \$2 trillion in assets, signed on to the Principles for Responsible Investment, sponsored by the UN Secretary-General's Global Compact and UNEP's Finance Initiative. This represents a major step forward in efforts to 'put a price' on environmental stewardship – or the lack of it – by channelling finance and investment towards companies that display corporate citizenship, including through meaningful action against climate change.

Despite these welcome advances, climate change still tends to be perceived as a predominantly environmental concern, though it has profound implications for economic growth, social advancement, and almost all other aspects of human well-being. Progress in dealing with it demands that we break down these barriers, and fully engage relevant sectors of government and civil society in our efforts. Indeed, a more holistic understanding of the implications of climate change can help solidify the political will and public concern necessary to help find solutions. There must be an integrated approach, in keeping with the precepts of sustainable development, which positions it firmly within a broader agenda. Such integration is already under way at the United Nations, where climate

change is being mainstreamed throughout the UN system – from the normative, intergovernmental processes of the Climate Change Convention, to the operational work of the funds, programmes, agencies, and regional commissions.

Our disaster relief strategies are taking the impact of climate change into account. The Global Environment Facility – an initiative being implemented by the UN Development Programme, UNEP and the World Bank – has been steering more funding to projects aimed at both mitigation and adaptation. UNEP is also working more broadly with UNDP better to integrate environmental issues into development planning, and it is studying the feasibility of making the UN Organization itself carbon-neutral.

Global action

Last year's climate meetings in Montreal made significant strides forward. Two parallel tracks were agreed that have great potential to intensify future global action. The first involves discussions among the parties to the Protocol, and looks at binding targets for the industrialized countries beyond 2012. The second is a dialogue involving all parties to the Convention which looks at a broader range of long-term cooperative action. The Climate Change Conference in Nairobi is well placed to advance action on both tracks, and to drive progress in both policy and practical terms.

Most of the immediate progress that can be made to reduce greenhouse-gas emissions involves using fossil fuels more efficiently. Industry, which accounts for over 40 per cent of global carbon dioxide emissions, can benefit from getting more electricity, transport, and industrial output for less coal, oil, or gasoline. That is a no-lose situation: more profit, less pollution, less global warming. The savings thus realized will buy time for the global climate system while alternative-energy technologies – which at present only contribute less than 2 per cent to world supplies – can be

developed and made cost-effective.

Some governments have already attempted to cut greenhouse gas emissions with a mixture of incentives subsidies, voluntary programmes, regulations, and fines. Several have attacked the problem directly by imposing 'taxes' on carbon use. Others have established 'carbon markets' where units of energy use may be bought and sold. These arrangements anticipate provisions that will apply beyond the Kyoto Protocol.

Growing urgency

The fight against climate change will require a sustained effort for this entire century. Unsustainable practices are woven deeply into the fabric of modern life. At last though, as Gleneagles and then Montreal showed, there is emerging agreement on the problem, as well as growing urgency in the search for solutions. The Nairobi Climate Change Conference is a significant opportunity to build on this understanding, and to take ever more aggressive measures to address the problem. We must all – individual citizens, private enterprise and policy makers alike – work to ensure that this strengthened resolve translates into real progress towards winning this battle ■

Mark Malloch Brown is Deputy Secretary-General of the United Nations.



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Setting Priorities

MARTHINUS VAN SCHALKWYK describes Africa's vulnerability to climate change and identifies key areas for action by both developed and developing countries

It has become abundantly clear over the past decade – based on evolving science, and work of the IPCC – that the potential impacts of climate change may hold a far greater risk than previously believed; that roughly 2°C is the lower range of predicted temperature increase, while 3°C seems increasingly likely from a doubling of pre-industrial carbon dioxide. Recent evidence also suggests that the biosphere may be approaching key physical tipping points – thresholds beyond which the external drivers of change are replaced by self-sustaining internal drivers – points beyond which policy options will become very limited indeed. It is clear that such changes could lead to irreversible damage across Africa, and the rest of the globe.

Adverse effects

In Africa, as in many parts of the world, impacts could include greater and more rapid sea level rise than previously projected, and more frequent coastal storms, threatening the lives and livelihoods of coastal

dependency and low adaptive capacity in the face of declining or migrating fish stocks resulting from climate change.

Forty per cent of Africa's international borders are demarcated by river channels and basin watersheds, and most major rivers traverse national boundaries. These are sensitive to even moderate reductions in rainfall, as are projected for much of western and southern Africa. Such reductions could lead to an increase in inter-communal and inter-state conflicts over scarce water resources and threaten the sustainability of hydro-electric power generation, if not managed in a proactive manner.

Projected significant reductions of perennial surface water in southern Africa by the end of the century could threaten key ecological and livelihood resources, such as the Okavango Delta in Botswana, and large urban centres, such as greater Cape Town. Aridification and greater extremes of climate, potential extinctions of endemic species and disruption of physical ecosystems – such as the remobilization of Kalahari



adverse effects. The risks are many, the opportunities far less bountiful.

Priority areas

Against this background, we look forward to a productive and constructive two weeks when we meet in Nairobi for the twelfth Conference of the Parties (COP12) if the United Nations Framework Convention on Climate Change (UNFCCC) and the Conference of the Parties/Meeting of the Parties (COP/MOP2) of the Kyoto

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